COST *and* MANAGEMENT

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Financial Statements

By S. E. LEBROCQ

Assistant Comptroller, The Steel Company of Canada, Ltd., Hamilton, Ont.

(Before the Hamilton Chapter, April 22, 1927.)

IN view of the fact that this meeting is the last one of the season, it seems only fitting that we should have selected some subject which could be appropriate to the occasion. Throughout the season you have been discussing the various component parts of COSTS. Tonight, we will endeavour to bring those component parts into composite form for executive action. We will, first, discuss the "Cost Sheet"—the document wherein all these component parts are assembled. As a logical sequence, we will briefly discuss the "Profit and Loss Statement" in which is exhibited the spread between Manufacturing Costs and Selling Prices, the Cost of Administration and Selling, Financial Gains and Losses, and Net Profits. Then we will conclude with a brief discussion of the "Balance Sheet" which as we all know, is the final statement—a statement containing the asset values, liabilities and net worth as at a given date.

(a) Cost Sheet

The "Cost Sheet" in modern business is possibly the most important instrument in the Accounting Department, and its provisions call for extreme care and thought in preparation. The Cost Sheet, if properly designed, vitalizes the facts. It is the X-Ray picture of Manufacturing operations and a summation of the service which the Cost Accountant is called upon to render—the service that justifies his existence as a Cost Accountant.

While, however, the Cost Sheet may be the X-Ray of modern business, the X-ray itself is of little value unless the picture is carefully developed, interpreted and acted upon. The Cost Accountant who is satisfied to merely record facts and figures and fails to get back of the figures, trace apparent leakages to their source, then secure reme-

dial action, lacks a proper appreciation of what is expected of him.

It is likewise important that the Accountant should know whether his reports are being made sufficiently clear, or whether they are looked upon as merely a record of historical facts to be simply "filed away" and no further action taken. It is important that the value of service rendered be made known as only by this means can the Accounting Department's efficiency be gauged and improved.

These are the thoughts underlying my discourse here this evening, and to illustrate we will take the cost sheets of an Automobile Industry and see what we can X-Ray, develop and interpret. This Industry makes its own parts in one department, sub-assembles in another, and assembles them into complete products in a third. I am taking this Industry for my illustration because of the definite and clear cut nature of its Cost System. It deals with specific costs on specific orders.

As production orders are placed on the Factory, Departmental Cost Sheets are provided as follows:

1. Material Cost Sheet for each production order.
2. Direct Labour cost sheet for each production order.
3. Master cost sheet for all production orders in Department.

The above cost sheets take care of the three recognized factors of manufacturing cost, "Direct Materials," "Direct Labour," and "Factory Expense." The totals of "Direct Materials" and "Direct Labour" costs sheets give us our "Prime Cost" values and are assembled on the Master Cost Sheet, while the third factor, "Factory Expense," as will be noted later, is also taken care of on the Master Cost Sheet. The totals in the latter cost sheet then represents "total factory costs."

1—*The Material Cost Sheet* provides for:—

(a) Daily and total materials used and spoilt for the production order, value and cost per material unit and per unit of product.

(b) "Standard" materials, value and cost per unit of product.

(c) Variations from "Standards."

2—*Direct Labour Cost Sheet* provides for:—

(a) Daily and total production, hours worked, wages and cost per unit of product.

(b) "Standard" production, hours worked, wages and cost per unit of product.

(c) Variations from "standards."

3—*Master Cost Sheet* combines both the material and direct labour cost sheets, and as orders are completed, the total costs are transferred to Finished Product Inventory Account. Departmental general overhead and machine burden is absorbed on this Cost Sheet. The basis upon which this is done is dealt with specifically under a separate heading. This Cost Sheet provides for:—

(a) Total Materials, quantities and values, and Direct Labour hours worked and value, by production orders, and cost per unit of product.

(b) General overhead and machine burden by orders and cost per unit of product.

(c) Departmental totals of orders.

(d) "Standard" totals of orders.

(e) Variations of totals from "standards."

Assuming that the orders are completed and cost sheets filled out, we are now ready to develop and interpret our first picture. The facts may be brought out as shown herewith. (*See opposite page.*)

Our next problem is to develop and interpret our next picture—the Departmental Factory Overhead. Before doing this, we will discuss briefly the principles of Overhead and the basis of loading, secondly the application of machine hour rates, and thirdly the accounting machinery involved in the use of these overhead costs.

General Overhead and Machine Burden in its generally accepted term means All Factory Costs other than Direct Labour and Direct Materials—all Indirect Expense items. These indirect items, as we all know, are to be added to costs in a manner consistent with services rendered. This may be on a "prime cost" basis, "Direct Labour Wages," or "Direct Labour Hours." Quoting W. B. Castenholz, Director of La Salle Extension University, he states:—

Item	Possible Variation	Possible Reasons	Action Necessary
Materials	Increase per unit of Product	1—Increase in price of Raw Materials	1—Verify with Raw Material account if in doubt as to price used. Also, what can be done to correct it? Can we get materials elsewhere at lower prices?
		2—Increase in Material usage.	2—See Material Cost Sheet for particular order affected, and ascertain if spoilt work is in excess of "Standard" spoilage, then trace back to operation and Operator. This is looked into as soon as job is completed, while fresh in Operator's Mind. Get the Works Manager back of this—it can be corrected unless conditions have changed radically.
Direct Labour	Increase per unit of product	1—Sub-normal production	1—See Direct labour cost sheet and ascertain if hours worked per unit is in excess of normal, then trace back at once to operation and operator.
General Overhead	Increase per unit of product	1—Sub-normal production	1—Specifically dealt with under next heading.

"The big question is not—which system is best? But which method will best meet our requirements? Because there is not one "best method" that includes all Plants, as plants are not all alike. Some are large and manufacture watches—others are small and manufacture automobiles."

For the industry under discussion, with the Production Order Cost System in use, the General Overhead is Predetermined, normal working Direct Labour hours ascertained and Standard Hourly Rates established. The overhead is absorbed into costs at these rates on the basis of actual Direct Labour Hours worked. The Machine Hour Rate for machine production centres is also predetermined. Reasons for predetermining overhead rates are obvious—costs must be ascertained as soon as the orders are finished. The Management cannot wait until the middle of the following month for overhead rates to ascertain their costs. Besides, the business may be quite seasonal and irregular, thus making it impracticable for one month's current expense to be absorbed as incurred. If prices were based on costs thus obtained, they would indeed appear exceedingly ridiculous and absurd.

Predetermined overhead is also used in Process Systems where accounts are kept for certain processes which cannot be gauged accurately—Foundry costs for instance. (This procedure is recommended by the American Foundrymen's Association). In other Process Costs such as the Cement Industry, Steel Industry, overhead expense items are applied as incurred, excepting certain items such as Insurance, Taxes, and other prepaid expenses which are apportioned. Extraordinary repairs may also be anticipated and spread over a period, if costs are liable to be distorted otherwise.

In the Industry under discussion, general overhead is taken up in costs on the basis of Direct Labour Hours, and not wages, because it has been established that the hourly basis is the most equitable, as it removes the handicap of wage variations existent in the industry.

Machine Hour Rates are used where machines and not labour are the predominating factors. The machine rate is predetermined in the same manner as the General Overhead rate, through the allocation of Budgetory Departmental expenses to the operations or machine centres. These consist of space charges, plus power and lighting. To these

are added the expenses created by the machines themselves, insurance, repairs, tool expense, supplies, depreciation. The total expenses thus ascertained, divided by the total normal machine hour capacity, predetermines the machine hour rate.

A time sheet is kept of machine hours worked by Production Orders and are extended at rates thus predetermined. The extensions represent the costs of operating specific machines on specific orders. The individual extensions are abstracted, summarised and charged to respective production orders, and reserve for factory overhead credited. By this method proper cognizance is taken of values of machines involved and their relative cost of operating on specific orders.

The unused Machine productive capacity is charged to "Unused Machine Burden" which at once establishes the Department efficiency and cost of maintaining idle machinery. Using Mr. Castenholz's expression, it is "the index of machine productivity and effective machine arrangements." This unearned burden is absorbed through the balance of Departmental costs as a general departmental overhead item, but the amount charged is specifically exhibited and analyzed.

The Overhead Accounting Procedure, in a general way, is as follows:—

First—"Budget of Factory Expenses" allocates Factory Departmental expenses to Department on basis of past experience and records. All items that can be allocated direct to a specific department are so dealt with. Other items are distributed on the most equitable basis, power on H.P. requirements, lighting on candle power, factory administration on all labour hours, etc. The total of these estimated expenses divided by the total normal department Direct Labour working hours, gives the Departmental direct labour rates for overhead absorption through Master Cost Sheets, on basis of direct labour hours shown on such cost sheets. Wherever possible and advisable expenses allocated to the Department as a whole are subdivided according to machine production centres and thus is ascertained the machine hour rate as described previously for overhead absorption through master cost sheets per summary of machine burden absorbed by all machines on specific orders.

Second—The accounting steps are—

"A"

Debit—Production Orders in process.
Credit—Reserve for Factory Overhead—Department————.

For Overhead absorbed at predetermined rates by finished and unfinished production orders per Master Cost Sheets.

"B"

Debit—Factory Expense Controlling Account.

Credit—Raw Material Inventory.
Vouchers Payable (Pay Rolls and Miscellaneous items).
Prepaid Insurance (monthly proportion).
Accrued Taxes (monthly proportion).
Reserve for Repairs (monthly proportion).
Stores.

For actual expenditures posted from vouchers, register and journal entries.

"C"

Debit—Reserve for Factory Overhead, Department ————.

Credit—Factory Expense Controlling Account.

To close Factory expense for the month of ——— into Department Reserves for Overhead.

Third: Reconciliation—

(a) Balances in "Reserves for Factory Overhead" accounts is the residue representing "Unearned" or "over-absorbed Burden" and should equal the value of the difference between actual hours worked and normal hours, multiplied by the predetermined rate plus increase or decrease of actual expenditures over "standard" expenses computed at predetermined rates.

If production is below normal or actual expenses higher than standard, there will be a residue in Reserve for Factory Overhead account, representing "Unearned Burden." Next month if production is above normal, this residue will not only be taken up but likely result in an over-absorption. At

any rate this Overhead account should practically balance itself during the accounting period if the overhead rate is adjusted periodically to meet new conditions. If the production for the year is sub-normal the balance remaining in that account representing Unearned Burden is then taken up in Profit and Loss.

(b) Totals of production orders in process per Master Cost Sheets are reconciled with balance of production orders in process Controlling Account. The Controlling Account is charged with summary of material requisitions, total of direct labour through vouchers payable and factory overhead absorbed by individual orders through Master Cost Sheets.

Overhead Rates—Actual Versus Standard

Having in a general way dealt with the principle of overhead as applied by this Industry and the accounting machinery involved, we will now develop and interpret our second picture, actual overhead expenses, versus "standard." For the President and Vice-Presidents, a statement may be prepared in tabulated form, showing:—

(a) Actual and "Standard" expenditures for each item making up total overhead, for current month, and cumulative. This is done by Departments.

(b) Total charged to production orders and showing residue in reserve for factory overhead account, namely, "unearned" or "overabsorbed" burden.

(c) Increase of actual over "standard" and balance per ledger.

To secure remedial action a "bar" chart may be prepared for the Operating Executives. This chart should show one designating bar for "actual" and another designating "bar" for "standards" so that when the chart reaches the Foreman he can visualize the variations at a glance. The chart must be simple and easily understood by the layman. It is extremely important to secure the foreman's interest—he is the man who spends the money, and the one capable of securing remedial action. "Unearned Burden" is an item which the President or Vice-Presidents will most likely want specifically analyzed, while "Indirect Labour," "Maintenance and Repairs," "Miscellaneous Supplies," "De-

fective Work," "Lost time," "Tool expense," and all other such variables are items requiring special emphasis in a foreman's reports. He has no control over and is not interested in fixed charges, so they are left out.

The importance of managerial use of the cost data cannot be over-emphasized. The information which is prepared so carefully and accurately should be used to correct defects and improve conditions wherever possible.

(b) Profit and Loss Statement

I am not going to deal with the form of Statement, because in spite of anything to the contrary, "time-honoured customs" will still prevail. Some will show "Gross" and "Net" earnings, then proceed with a number of deductions and sub-totals, while others having a clearer conception of what "net" means will stop there. The "Net Earnings" and their disposition is what the average stockholder is usually interested in. Our concern, as Accountants, is with what constitutes "Net Earnings," and when drawing up a profit and loss statement to distinguish where expenses leave off and profits begin.

Net Earnings while they may be shown as such on the published statement should be ascertainable in the following manner:

(a) Net Sales, less Manufacturing cost of sales equals Manufacturing or Gross Profits.

(b) Gross Profits, less Administrative and Selling Cost equals Operating Profit.

(c) Plus or minus financial gains or losses equals Net Profit.

In other words, the principles governing the lines of distinction should be the recognized basic principles underlying the whole business structure—

Manufacturing
Selling and Administration
Financing

Manufacturing Cost of Sales may or may not include Depreciation by individual products. In Process costs such as the Cement industry, accumulated departmental depreciation is charged to the finished product and not to various stages of process. This is a standardized practice adopted by The Portland Cement Association. In other Process In-

dustries depreciation may be deducted in total from earnings but considered when establishing sales prices. For rate fixing as applied to Public Utilities, depreciation is calculated on "replacement values." In this way the consumers pay for replacements through the Service Rate. In municipalities depreciation cannot be considered. Municipal Corporations do not operate for gain and have no means of providing for replacements. If properties are constructed the cost is met usually through an issue of debentures. The debentures are redeemed by Sinking Funds created through annual levies over a period. The ratepayers are only interested in paying for the property from which they are deriving benefit and not in one, thirty or more years hence. Obviously the Municipality cannot raise an additional levy to create a Depreciation Reserve and there is no other source through which Depreciation can be provided.

Manufacturing Cost of Sales plus Selling Costs.—In some Concerns Selling Expenses constitute the largest part of costs. In that event the predetermined rate principle should if possible be adopted and sales expenses applied against sales on the basis of actual shipments. This is particularly important when sales are seasonal and irregular. If selling expenses under such circumstances were applied as incurred the Profit and Loss Statements would be exceedingly erratic. Whether or not selling expenses be charged to cost of sales accounts (not Inventory accounts) by individual products or deducted from Gross profits in total, depends entirely upon the nature of the business and the practicability of accurate apportionment. This procedure in any event is an ideal toward which Accountants are working. The Principle of Predetermined rates for selling expenses has not yet been developed to the extent that it can be recommended for general use.

(c) Balance Sheet

Considering that every single item of accounting finds expression somewhere in the "Balance Sheet" and it requires possibly seven or eight volumes for a University to make clear the various items and practices involved, it must be realized that only a few high spots can be discussed here this evening.

Under this particular heading, is brought the activities of the General Accountant. The Cost Accountant's work

as far as the general books are concerned is over when he has closed all the nominal accounts and established inventory values.

Unlike the Cost Sheet, however, the Balance Sheet is not usually an X-Ray picture of the facts of the business. Ordinarily it contains only the bare facts, if that. It is also largely an expression of opinion but logical opinion and not guess work.

To make our discussion interesting I have transcribed a balance sheet of the Score Fabricating Corporation appended to a treatise on this subject by Charles B. Couchman, C.P.A., and published by the Journal of Accountancy Inc., which as you know is the mouthpiece of The American Institute of Accountants. This particular balance sheet, we are told, is arranged according to the suggestions of The Federal Reserve Board in its Bulletin of April, 1917. The Federal Reserve Bulletin is generally recognized as an authority.

The Form of it is on the "Current" principle, that is, it starts off with the Current Assets listed in logical progression. For instance "Cash" is the most liquid asset and it is listed first. "Real Estate" is the most "fixed" asset and it is listed first under that heading. The current liabilities are directly opposite the current assets and listed also on the progressive principle. Fixed liabilities are opposite the Fixed Assets and the Proprietorship Group are under one classification at the tail end of the liabilities. It is a very clear cut arrangement and classification and two things in particular stand out very clearly, the "Working Capital" and the "Net Worth."

Notes and Accounts Receivable—It has been said that most Balance Sheets are drawn up for Credit purposes. The arrangement under this sub-heading and data given assuredly justifies that belief, and should satisfy the most fastidious Banker. Even the "Provision for Bad Debts" is specifically identified.

Inventories—The all-important consideration here is their valuation. Using "cost" or "market," whichever is lower, is considered the general rule though there are exceptions to this rule. For instance, if at the time of valuation there is a general depression in market prices and in-

dications are that this depression is only going to be temporary it would not be advisable to apply the general rule. If it was applied it would result in taking a loss which might never become a true loss and likewise result in abnormal earnings the next period which would not be real. It is in this connection that the Accountant has to exercise his sound business judgment.

Fixed Assets have many values, but to accomplish the functions the Balance Sheet is intended to perform, actual costs and nothing but costs should represent Capital Asset Values. Assets, whether "Fixed," "Current" or otherwise, are nothing more than prepaid expenditures, and both are used for the same purpose in the conduct of the business. "Quick" assets and "current" assets are convertible into cash and make financing possible. "Fixed" assets are "service" assets and assist in the process of creating more working capital. Both are part of cost of operations at some stage or another. Whether or not we purchase raw materials and call them "Quick" assets or whether we buy a machine and call it a "fixed" asset or Capital item, makes no difference to its ultimate destiny—cost and profits must absorb the expense in any event. Cost of raw materials is absorbed as used. In the case of a machine the expense is also absorbed as used via the Depreciation route. Depreciation is nothing more than a proportionate write-off of a prepaid expense, and the only justification for not actually crediting the asset as in the case of Raw Materials, is because the amount of depreciation cannot be determined accurately. The amount of wear and tear resulting from the use of a machine over a definite period is a cost expense for that period, just as much as the value of materials used, and both enter into the cost of job completed during that particular period. It makes no difference whether the depreciation is charged to Job, Department or in total, it is an expense that has to be met through costs, sooner or later, and the extent of that expense is the Cost of the asset purchased.

Patterns and Drawings—You will note among the Fixed Assets an item "Patterns & Drawings" $9,712.25. It is assumed that this represents the cost price of patterns and drawings actively in service. This is sometimes a very doubtful asset, particularly where models are constantly changing and obsolescence is an important factor. In such cases the conservative way is to write them off as purchased

or manufactured, or if deferred, charge them off as quickly as possible.

Prepaid Expenses representing Insurance, Taxes, etc., are usually included under the heading of "Deferred Charges." Some claim that the latter term has reference to the heading of "Deferred Charges." Some claim that the latter term has reference to services already rendered, such as moving expenses or advertising, and the period of amortization is arbitrary, while the period represented by prepaid expenses is definite. In contrast with "prepaid expense" a "deferred charge" does not represent any legal right to receive a service during period of amortization because the service has already been rendered. This, however, is a matter of knowing exactly what the classification covers. It is a distinction without much difference. The main thing is to justify the values deferred.

Current Liabilities are detailed in such a manner that they speak for themselves, and I would say, to the Banker's entire satisfaction.

Net Worth—There is a great deal of merit in thus merging and classifying Capital and Surplus, but in doing so, proper regard should be given to the significance of any Reserves which may properly be listed under that classification. There are "Reserves" which are simply "Valuation Reserves," measuring the value of specific assets. and "Surplus Reserves," which properly belong to the Proprietorship Group. "Valuation Reserves" such as Depreciation, Depletion or Amortization, and Market Fluctuation, should be deducted from the Assets affected or isolated from the Net Worth Group on the Liability side, then deducted from Assets when arriving at the Net Asset figure. "Surplus Reserves" such as Fire Insurance Reserve, Reserve for Sinking Fund, that is, Sinking Fund that is not considered equivalent to or an addition to the Regular Depreciation Reserve, are mere appropriations of Surplus and should be included in the Net Worth Section, properly designated and shown under caption "Appropriated Surplus."

Surplus—In Webster's Dictionary, we find several definitions of Surplus, among which are "that which remains when use or need is satisfied; excess; overplus," also "as distinguished from the Capital Stock of a Corporation, the excess of net assets over the total face value of its shares."

The majority of stockholders will, I venture to say, accept the first definition, and consider that Surplus is an amount available for Dividends. Designations may be made according to source or according to disposition, or both. Whatever method is used the amounts not available for Dividends should be clearly ear-marked and isolated from Free Surplus. For instance, "Paid in," "Capital" or "Earned Surplus" should be designated as such and the latter "Earned Surplus" should be split up as to "Appropriated" and "Non-Appropriated." For the Accountant the last two subclassifications are not absolutely necessary, because he can to some extent determine this for himself by analysis of the Balance Sheets. To the uninitiated "Surplus" would convey only the literal interpretation of the word, hence the reason for clearly stating what it represents.

Goodwill, as you will observe, is shown as a Deduction from Net Worth. A great deal has been written on the subject of this "intangible asset," and its value as an asset much discussed, but the best proof of its negative quality as collateral is the fact that its worth is exactly Zero, as evidenced by the action of the Federal Reserve Board. Except in case of a partnership, when it is desirable to equalize investments of partners, the creation of Goodwill as an Asset and incidental increase of proprietorship or Net Worth is only justifiable if it has been actually purchased. The purchase of Goodwill is similar to paying a premium for the purchase of Bonds which promise to yield more than a normal rate of interest. In such case the premium would be amortized over the period of the Bond Issue as a charge against the Income derived from such bonds. It would therefore seem logical to treat Goodwill in the same manner. Authorities, however, differ in the treatment of Goodwill and in the final analysis the matter must be treated on its respective merit and its relative value.

The Test—Having dealt with the various fundamentals underlying the construction of the Score Fabricating Company's Balance Sheet we should under ordinary circumstances work out the various "Static" and "Velocity" ratios to determine its financial strength and possibilities. The Balance Sheet, however, is only a statement of condition, stating the facts on a given date and unless considered in relation to previous balance shets, together with Income and Profit and Loss Statements, plus trend of conditions in that

Industry and Industries in general, our deductions would necessarily be extremely limited.

The "Application of Funds Statement" used in conjunction with a comparative Balance Sheet is invaluable as a means of determining the disposition of profits for a given period. The statement effects a reconciliation of the increase or decrease in Working Capital with the "Funds provided" and "disbursed" within the period. In other words, the net increase or decrease in "Working Capital" should equal the total Profits and amounts set aside for Depreciation and other Reserves, less disbursements in the way of Dividends, purchase of fixed properties, etc. For example:

Application of Funds Statement—Year Ended December 31, 1922

	1921	1922	Increase or † Decrease
Current Assets	$595,000.00	$790,000.00	$195,000.00
Current Liabilities	375,000.00	585,000.00	210,000.00
	$220,000.00	$205,000.00	†$ 15,000.00
Deferred Charges	5,000.00	7,500.00	2,500.00
Working Capital	$225,000.00	$212,500.00	†$ 12,500.00
FUNDS PROVIDED			
Profit for Period		$ 42,500.00	
Reserve for Depreciation		12,250.00	
		$ 54,750.00	
FUNDS DISBURSED			
Cash Dividends	$ 30,000.00		
Purchase of Fixed Properties	35,000.00		
Replacements Charged to Reserve for Depreciation	2,250.00	67,250.00	
Decrease in Working Capital			$ 12,500.00

Conclusion

In conclusion, it will be observed that facts in themselves are of little value after all if not related to something else. Everything is relative. Simply to say a building is worth $10,000.00 means nothing until one has a knowledge of the value of its component parts and a comparison is made with the relative value of some similar type of building. Neither can we appreciate the significance of manufacturing

costs unless we examine the component parts making up the whole and compare them with "Standards" or past performances.

We can neither appreciate the true significance of a Corporation's status and possibilities unless we have a broad knowledge of surrounding circumstances. The Balance Sheet in itself is simply a statement of condition on a specific date and consequently our discussion on the Balance Sheet under review has of necessity been confined to fundamentals with the view of making clear that condition. To do anything beyond that we must obtain comparative statements, work out some or all of the various ratios suggested, then with a knowledge of the industry, its management and past performances, make a forecast of its relative possibilities in the future.

The Accountant is called upon to make decisions which will tell the truth as nearly as it can be ascertained. He is influenced by various factors, chief of which is the human tendency to overstate values. The normal business man is an optimist while the accountant must to a certain extent be a pessimist. Although he must take a conservative point of view he must at the same time be constructive.

The duties of the executive accountant are very extensive. The mere construction and verification of accounts is only part of his work. The modern conception of an accountant in an executive position calls for the highest type of analytical mind. He must not only be able to analyze complicated situations in such a way as to show the facts clearly, but he must be able to offer constructive suggestions that will enable the management to use the work of the accounting department to the fullest extent.

"Knowledge is power" is a very old phrase, but none the less impressive. In the accounting profession "knowledge" is the Accountant's Stock in Trade, and to exist he must possess it and sell it and its marketable value will be in exact proportion to its quality. The whole underlying principle of human effort is simply an exchange of values.

SCORE FABRICATING CORPORATION

Balance Sheet
As at October 31st, 1923.

ASSETS			
CASH:			
On hand		$ 500.00	
In Bank		13,218.17	$ 13,718.17
NOTES AND ACCOUNTS RECEIVABLE:			
Notes of Customers on hand (not past due)		6,400.00	
Notes Receivable discounted		5,150.00	
Accounts with customers (not past due)		38,372.12	
Notes of customers (past due) (cash value $3,375.00)		4,575.00	
Accounts with customers (past due) (cash value $1,290.00)		3,127.43	
		$ 57,624.55	
Less provision for bad debts	$ 3,037.43		
" provision for discounts, freights " and allowances	1.481.22	4,518.65	53,105.90
INVENTORIES:			
Raw Materials on hand		31,280.73	
Goods in Process		41,290.19	
Uncompleted contracts	$62,318.19		
Less payments received thereon	30,420.00	31,898.19	
Finished goods on hand		53,773.16	158,242.27
Total Quick Assets			$225.066.34
SECURITIES:			
Stocks and Bonds (at not to exceed market price)		22,415.00	
Notes of Officers and Employees		1,000.00	
Accounts due from Officers & Employees		2,162.00	25,577.00
Total Current Assets			$250,643.34
FIXED ASSETS:			
Land used for Plant		17,500.00	
Buildings used for Plant		58,218.50	
Machinery		81,718.73	
Tools & Plant Equipment		44,219.62	
Patterns and Drawings		9,712.25	
Office Furniture and Fixtures		13,127.66	
		$224,496.76	
Less Reserve for Depreciation		50,382.98	
Total Fixed Assets			$174,113.78
PREPAID EXPENSES:			
Interest, Insurance, Taxes, etc.			3,725.16
			$428,482.28

FINANCIAL STATEMENTS

SCORE FABRICATING CORPORATION

Balance Sheet
As at October 31st, 1923.

LIABILITIES

BILLS, NOTES & ACCOUNTS PAYABLE:			
UNSECURED BILLS & NOTES:			
Acceptances made for Materials Purchased		$ 18,370.15	
Notes given for Materials purchased		1,828.00	
Notes given to Banks for money borrowed		7,210.00	
Notes given for purchase of fixed assets		5,715.50	$ 33,123.65
UNSECURED ACCOUNTS:			
Accounts payable for purchases (not due)		83,710.99	
Accounts payable for purchases (past due)		9,222.37	
Accounts payable to Officers re Employees		650.00	93,583.36
SECURED LIABILITIES:			
Notes receivable discounted (contra)		5.150.00	
Obligations secured by collateral		15,250.00	20,400.00
Accrued Interest, Taxes and Wages			$ 6,773.74
Total Current Liabilities			$153,880.75
FIXED LIABILITIES:			
Mortgages on Plant due Jan. 1, 1926		30,000.00	
Chattel Mortgage on Machinery		28,500.00	58,500.00
Total Liabilities			$212,380.75
NET WORTH:			
Preferred Stock issued	$100,000.00		
Less Reacquired	7,500.00	92,500.00	
Common Stock Issued		125,000.00	
Surplus		38,601.53	
		$256,101.53	
Less Book Value of Goodwill		40,000.00	216,101.53
			$428,482.28

Costs in the Petroleum Industry

By T. C. McCOBB
Secretary-Treasurer, Imperial Oil, Ltd., Toronto

(Before the Toronto Chapter, April 20, 1927.)

MY presence here this evening, I can assure you, is not due to any vain-glorious belief on my part that I am particularly competent to speak on the subject assigned me, but because I find it difficult to break a comparatively recently formed habit. As some of you may be aware, the petroleum industry in this Province was, some two years ago, the object of a very rigid and searching investigation conducted under the authority of the Government of Ontario. Mr. Guilfoyle was one of the chief inquisitors, and I was advised by the directors of the Company with which I am associated, to submit myself wholly and entirely to him and to obey his every dictate. For several months I occupied this relationship to him, and, while I found him a very kindly and considerate inquisitor, I early came to the conclusion that the best way to get along with him was to obey his orders. Naturally, when he demanded a paper from me on cost accounting in the petroleum industry, I obeyed without question, although with much greater misgivings of success than I experienced when he asked me to disclose our meagre and attenuated profits.

Although Canada has but an inconsiderable amount of petroleum of its own, it is nevertheless a pioneer in the oil industry. When all the world was using sperm oil and tallow candles for illuminating purposes and the automotive engine was a creation of which one read only in the novels of Jules Verne, and petroleum was unknown on this continent except as a medicine, a man known as J. H. Williams, drilled a well at Oil Springs, in 1858, in search of crude petroleum. He was not successful, but he was a year in advance of the famous Drake Well in Pennsylvania which was the genesis of the great oil industry of the world to-day.

It is a curious fact that although the oil areas centering at Petrolia, Ontario, have made a very minute contribution to the oil production of the world, their contribution in brains has been a most important factor in oil produc-

tion here and in almost every other country. The Petrolia system of drilling was for many years the standard everywhere and Petrolia boys have been foremost in every petroleum field. Old Home Week at Petrolia a couple of years ago produced bronzed and bearded men from Russia, Korea, South America, the Dutch East Indies and many other foreign parts who had left the town as striplings to make their fortunes in the great centres of oil production abroad.

In the sixty-seven years that have elapsed since the discovery of oil in Canada, the Western Ontario fields have produced 25,000,000 barrels of crude and that has been practically the entire crude oil production of the whole Dominion of Canada in that time. At the present rate of crude production in the United States, this production of 25,000,000 barrels of crude oil is duplicated in the United States every fortnight or less. At the present time she is producing about 2,400,000 barrels of crude oil every day, while Canada produces about 160,000 barrels a year. This 160,000 barrels a year which Canada produces was required to be supplemented last year by imports of 16,454,249 barrels of crude oil in order to keep pace with our domestic requirements of gasoline and other petroleum products.

There are, roughly, 650,000 motor vehicles in Canada, and if, as may happen, the United States places an embargo on the export of crude ptroleum, and if no petroleum were available elsewhere, ninety-nine per cent. of the motor cars in Canada would stop running. That is to say, if the owners of some 4,000 cars in the petroleum district determined to have first call on all the petroleum that Canada produced, the remaining 646,000 cars would have to stay in the garages, because the average consumption of gasoline per motor car is a gallon a day, and the 4,000 cars up there in Western Ontario would, in the course of a year, eat up the entire domestic production.

Description of Operations

Now the operation of producing a barrel of crude oil is somewhat complicated in addition to being very expensive. The gasoline content of a barrel of crude oil will take an average motor about 250 to 300 miles. The way this barrel of crude oil is produced is this: Some lone hunter with a string of drilling tools or some drilling outfit of a petroleum company decided that the vicinity of Beaumont, Texas,

would be a good place to drill for oil. The general geology of the country would give them that idea, and so they set up a derrick many times higher than this room, and with a steel stem about my shape, they would begin pounding a hole in the ground. The hole goes down one hundred feet, two hundred feet, a thousand feet, two thousand feet, three thousand feet, sometimes four thousand feet. Sometimes, about twice out of five, they find oil. If they do not, fifty thousand dollars or a hundred thousand dollars is wasted. But sometimes they strike oil and it pours up from the punctured crust that has held it for centuries and at the surface becomes available for the service of man. Crude oil is the raw material of all petroleum products, and when you see it first it is a thick gummy liquid like molasses. Then the pipe line man appears. It is his business to transport oil, and he immediately lays a pipe line something like an overground sewer to the oil well and soon the crude oil, which has meantime accumulated in fifty-five thousand barrel or hundred thousand barrel tanks, is conveyed to the main trunk line. Now the barrel of oil is on its way. Through this small gathering line it reaches Hewitt, Oklahoma, which is a pipe line terminal and when there it is only a matter of 1,097 miles to the gates of our central refinery at Sarnia. Through the big main pipe line, over hill and dale, through marshes and forests and cities and plains the barrel of crude makes its way and finally after forty-six days it finds a resting place in a big storage tank at the Sarnia refinery. Meantime, something may have happened in the crude oil market. Other oil fields may have failed or the consumption of gasoline may have materially increased and the value of the crude oil in the pipe line would then advance. Having regard to the fact that this country is dependent upon foreign sources for 98 per cent. of its petroleum products, it is clear that it was not only a matter of business but a question of national concern that this country should find among its natural resources a petroleum supply of its own. Our potential oil producing areas are very large, but you cannot expect to find oil where you find other minerals, such as gold, silver and iron. We have in this country the greatest area of hard rocks that there is anywhere in the world exposed to the sun. By touching the fringe of this unknown empire we have become, in two decades, the third gold-

producing country. We have the greatest nickel mines; we have taught the world the commodity use of asbestos and cobalt. Our silver mines have become a synonym of riches to millions who know Canada only as a place on the map, but this great pre-cambrian shield which covers two million square miles of Central and Eastern Canada cannot be expected to produce petroleum, although some day with petroleum I feel that this great mineralized body will prove to be our economic salvation. Central and Eastern Canada we, therefore, accept as parts excluded from the area of potential oil reservoirs. The search for petroleum has been practically confined to the Western provinces, and we have there the spectacle of drilling rigs scattered from the international boundary almost to the Arctic Ocean. That search which has been carried on almost continuously since the early days of the war, when it was forced upon public consciousness that petroleum was the most important natural resource that any nation could possess, has been up until the recent past almost a total failure in the way of material results. This search has been carried on practically single-handed by the Company with which I am associated. It has involved an expenditure of two or three million dollars, the drilling of six or seven miles of hole, and the display of the most wonderful pioneering spirit with which I have ever been associated.

Having in mind the lack of immediate success that attended the search for oil in the West and the fact that at any time the United States might place an embargo on the export of petroleum, the attention of the oil companies was turned to other fields. The United States has been the oil reservoir of the world since oil was discovered. It now appears as if this country and South America might provide the major needs for the next generation. In endeavouring to make this country economically independent in respect to petroleum, the Company with which I am associated sent geologists to South America, and as a result of their investigations we acquired large areas in Colombia and Peru. The development of these fields has been mainly the work of Canadians; most of them from Petrolia. There are hundreds of Canadians in these countries now, their children going to Canadian schools and studying from Canadian text-books and are taught by Canadian teachers. When they are ill they are attended by Canadian doctors and Canadian nurses.

There has been expended roughly $40,000,000 in the development of these fields. The town of Talara in Peru is just a section of Canada; as though some quiet lakeside village had been lifted bodily and set down on another continent. The Peruvian Field has now been developed to the point where the production is 30,000 barrels a day, and this with only a fraction of the field drilled. The field in Colombia is situated some 400 miles from the coast. The Magdalena River is not navigable for ships of deep draught, so it was necessary to construct a pipe line from the coast to the fields. This pipe line required an expenditure of $18,000,000 and the oil production from the Colombian Field, which will be some day 50,000 barrels a day, is being transported into tank ships to Halifax and Montreal and other ports, and the refineries at these points will not only supply the domestic requirements but may in the future export the finished products to foreign countries.

The Imperial Oil Company, Limited, was organized in September, 1880, and was a combination of several refineries then operating in Western Ontario, and at that time manufactured only one article, viz; Kerosene or Lamp Oil. The name of the Company was changed to Imperial Oil, Limited, by Supplementary Letters Patent dated September 15th, 1919.

Business has developed until, at the present time, we have in operation in the Dominion six refineries located at Ioco, B.C.; Calgary, Alta.; Regina, Sask.; Sarnia, Ont; Montreal, Que.; and Halifax, N.S., with large distributing plants at Fort William and Levis. The combined daily capacity of these refineries is about 45,000 barrels. We are now operating over 2,000 tank cars and 13 ocean and lake steamers. We have throughout the Dominion 1,705 distributing points through which Petroleum Products are delivered to the trade.

The above brief outline coupled with the activities of the other oil companies will give you some idea of the Petroleum Industry in Canada and the problems that confront the Accounting Department to keep track of the petroleum products from the time they are purchased from the producing company until the finished product is delivered to the ultimate consumer. I may add that a complete record is kept of every barrel from the time of its purchase until it is eventually sold, and, as it is handled about 25 times

before this is accomplished, it requires a very complete system in order to keep the records properly.

Imperial Oil, Limited, has an interest in the International Petroleum Company and the Royalite Oil Co., Ltd.—both of which are producers of petroleum products—but has no production of its own. Therefore their cost accounting is in no way concerned with production but deals entirely with the three other divisions of the Petroleum Industry, viz: Transportation, Refining and Marketing.

Transportation

The transportation of Petroleum Products is divided into four divisions, i.e., Pipe Line, Tank Car, Tank Steamer and Motor Truck. The cost of transportation by the latter method, however, is considered a part of our marketing cost as it covers the delivery of products from the storage facilities to the purchaser, whether it be jobber, dealer or consumer.

The pipe line method of transportation is divided into two divisions, i.e., gathering lines and trunk lines. The gathering lines serve to collect the oil from the wells and deliver it to the trunk lines through which it is pumped to the tank farm and thence to the refinery or to a shipping port, from which point it is delivered to the refinery by tank steamer.

It sometimes happens that the product may be transported through several trunk lines before it arrives at destination. In such cases through rates are established. These rates are divided between the participating carriers generally on a mileage basis. Pipe lines, like railroads, are considered common carriers, and, in the United States, are under the jurisdiction of the Interstate Commerce Commission. No rate can be published without first obtaining the approval of this Commission. In order to obtain a new rate, or change a regularly published rate, a petition must first be filed, the Commission's approval obtained, and the rate published thirty days before it can become effective; except in special cases where the circumstances warrant, in which case the Commission may approve a shorter period of publication before effective date. In establishing these rates due consideration is given to operating costs and a fair return on the capital invested.

Soon after the pipe lines came under the jurisdiction of the Interstate Commerce Commission, it became apparent that, in order to establish rates that would be fair to both the shipper and the carrier, a uniform method of accounting should be established by the pipe lines. The Interstate Commerce Commission therefore issued instructions to the various pipe lines, effective January 1st, 1915, carefully outlining the classification of investment in pipe lines, pipe line operating expenses and pipe line operating revenues. These instructions were very complete and very clearly defined as to what should be Capital Investment and Operating Expenses as well as Operating Revenue.

In this classification the principal items of expense are Maintenance, Transportation and General. Maintenance includes the repairs and upkeep to the physical equipment, also depreciation and retirements; Transportation includes the cost of operating the pipe line; and General Expense includes office expense, personal injuries, damage to property and any other items which would naturally come under this heading. Subdivisions of the above expenses are outlined in considerable detail so the management has a very complete statement of what the expense consists.

After obtaining the expense as outlined above, it is quite easy to figure the cost of transportation by dividing same by the number of barrels of oil transported.

Tank Cars

Some of the oil companies own and operate their own tank cars; others rent their cars from an equipment company such as the Union Tank Line Co. Companies that rent their equipment charge a loading and per diem charge for the use of the cars and also obtain an allowance from the various railroads for the use of the cars. The charges made by the Union Tank Line Company, which is the largest company in this business, are based on 1c per 100 W.G. capacity of the car for ordinary tank cars and 1½c per 100 W.G. capacity for insulated cars while under load, plus 3 times the per diem rate to cover the loading charge which is applicable to both classes of cars. The mileage allowed by the railroads for the use of the cars is 1½c per mile under load.

The cost of operating the equipment consists quite largely of maintenance charge, depreciation and general expenses. Companies that operate their own equipment

generally charge their Marketing or Refining Department for the use of the cars on a basis as outlined above, crediting this income against their operating expenses.

Tank Steamers

For the transportation of oil by water some companies have their own steamers and others have to charter them in the open market. Companies that own their steamers generally operate them either as a separate company or a separate department, crediting it with freight rates based on the open market. The cost of operating these steamers is generally handled the same as that of any steamship company, and with the thought that at some former meeting the question of cost pertaining to steamers might have been dealt with. we will not go into details.

The cost of transportation, whether it be by pipe line, tank car or tank steamer, is always considered a part of the cost of the product, whether it be crude oil delivered to the refinery or finished product from the refinery to the marketing division or purchaser.

Production

As previously stated, this Company does not produce any oil but purchases from producers in Canada, United States and South America, therefore the cost of the raw material is the purchase price plus the transportation charge by whatever method it might be delivered to the refinery.

Refining

The manufacture of Petroleum consists of three major operations; i.e., distilling, treating and finishing.

There are several methods of distilling, known as Batch, in which the still is charged and a certain quantity distilled overhead leaving a residue; Continuous Distillation, in which several stills are connected together, the charged stock travelling from one to another and certain products being taken off at each still; and Pressure and Vacuum Distillation, where, as these terms indicate, products are distilled under pressure and vacuum.

Some of the distillates from each of these methods of distillation are ready after the first distillation to be delivered to the Treating or Finishing Department to be made into finished products. If this were the case in connection

with each distillate, the method of cost accounting would be simplified. This not being the case, numerous stocks of necessity must be further refined in one of the above processes, and in some cases stocks are cycled and pumped direct from the condenser into the charging line and re-distilled. It is therefore necessary in order to obtain costs to keep a complete record of the yields of each of the above processes on the quantity charged, and also what proportion this yield bears to the original crude charge.

The distillates are pumped from the distilling department to either the finishing or treating department to be made into finished products. In these processes certain stocks are obtained which must be again distilled before they are what might be termed finished distillates. In these processes, as in distilling, a record must be kept of the percentage yield and the quantity charged and what proportion it is of the original crude charge. Statements known in the Petroleum Business as "Yield Statements" are prepared monthly, showing the quantity of products or distillates charged to each Department and the yield therefrom, and what percentage these yields bear to the original crude charge. These percentages are used as a guide to determine whether the maximum quantity of the various products from the crude are being obtained, and are also used as a basis of determining the cost of manufacturing a given quantity of crude.

Determining Costs

In determining the cost of operating a refinery, all the operating expense is charged first to a manufacturing expense account which is kept on the General Ledger and is treated as control for the Manufacturing Expense Ledger. In the latter a separate account is opened for each department and an analysis made under various captions, such as labour, repairs, fuel, chemical, etc. These items are further subdivided into classes of labour, kinds of repairs, nature of fuel and chemicals for general information of the operating management.

A code system is applied to the Manufacturing Expense, a separate code number being established for each Department and a separate number for each subdivision of expense for the various departments; to illustrate: Labour Superintendency is No. 1, Continuous Crude Stills is No. 100, there-

fore Labour Superintendent under Continuous Crude Stills would be 101. This same principle is carried through each department and in each subdivision of expense in each department; therefore distribution of expense is much more easily made.

Having accumulated the costs, further distribution is made over the operations in each department. The divisions are made on various bases depending on the nature of the operation.

For instance—a distilling department cost is proportioned over the operations taking place in the department on two separate bases. The cost of Labour, Repairs, etc., is proportioned on the "hours run" for each operation, whereas the Fuel and Firing Costs are based on the "hours fired." This is due to the fact that two operations each of different stocks may require the same length of time to run, but it would be necessary to fire one longer than the other.

Treating Department Costs are usually divided over the operation on the basis of the gallons treated with the exception of the chemicals which are distributed on the actual quantity used.

In order to make this distribution it is necessary to accumulate the "hours run" and "hours fired," etc., from the Distilling and Treating Operation Cards furnished by the respective Departments.

When the final cost statements are compiled a separate section is used for each operation and the amounts against each item of expense as shown on the Manufacturing Expense Ledger are entered opposite the corresponding item on the statement; thus when completed the amounts expended for Superintendent Labour, Regular Labour, Repairs, Chemicals, etc., are all shown separately.

The quantity of oil run in a distilling operation and the quantity of oil treated in the treating operation is the divisor in arriving at a unit cost for each operation. A constant comparison of this unit cost assists the operating manager to keep a control over his operating costs.

The quantity of fuel and steam used in a distilling operation is converted to a unit basis per 100 gallons run, and the quantity of chemicals used is reported as "lbs. per 1,000 barrels." The object of such figuration is to assist in the control of operating costs.

When all operating costs are complete, a summary is made showing the cost of processing one hundred gallons of Crude Oil to finished products. Adding to this the original cost of crude gives us the total cost of 100 gallons of finished products from the crude.

Distributing Costs Over Products Manufactured

Having arrived this far in the process of cost accounting, the accountant is confronted with the problem of distributing this cost over the various products manufactured. For a number of years this has been a very contentious point. However, I do not propose to go into any lengthy discussion on this matter for the question was quite definitely decided for most of the oil companies by the Federal Trade Commission of the United States in their investigation into the cost of gasoline in the year 1915. The result of this investigation was that this cost should be spread over the various products in proportion to the yield and realization of each product. The yield from 100 gallons of crude as outlined in the yield statements previously referred to is multiplied by the realization from each product and thus a total realization of the products manufactured from 100 gallons of crude is obtained. This figure divided into the cost of manufacture plus the cost of crude equals the percentage of realization per 100 gallons of crude. Consequently costs are obtained by multiplying the percentage thus obtained by the amount realized from each product. I wish to repeat that this method was adopted by the U.S. Federal Trade Commission and is now quite generally conceded to be the fairest way of arriving at the manufacturing cost of petroleum products.

Marketing

This brings us to the final step in the petroleum business, which is the marketing of the finished product.

A large percentage of the marketing companies, or marketing divisions of companies that are engaged in all phases of the petroleum business, are purchasing their products in bulk as well as in various kinds of containers, such as wooden and steel barrels, cases and cans. A large proportion of the quantity that is purchased in bulk is subsequently barrelled in the Marketing Department before being delivered to the ultimate consumer, consequently there are

two divisions in the cost of marketing oil, viz.: barrelling expense and marketing expense and from this we get what is known in the oil business as our B. & M. expense which is our Barrelling and Marketing Costs.

In our own Company for marketing purposes the Dominion of Canada and Newfoundland have been divided into thirteen divisions. Each division is composed of a main station to which all of the surrounding 1,700 odd branches or substations report.

Each main station carries its own Bank Account, Accounts Receivable Ledgers and a General Ledger which is used for control accounts of the auxiliary ledgers, also the control account with the head office. All of the disbursements made by the various divisions for account of barrelling and marketing expense are charged direct to the head office control account. From this you will see that the marketing expense for each division is accumulated in the head office. Currently copies of the Cash Disbursements Sheets together with all supporting vouchers, are forwarded to head office. These disbursements are coded before they leave the divisional office. In the head office they are analyzed, checked and balanced by a staff of experienced clerks, who are known as junior auditors or B. & M. Clerks.

In order to ensure the proper distribution of these expense items a primer has been prepared and a copy supplied to each division. This primer very clearly outlines under what caption of expense every item should be coded. The total expense of each division is charged to that respective division's B. & M. Expense Account. To expedite payment and save discounts it often becomes necessary for payments to be made at the head office. Such payments are currently charged direct to the B. & M. expense of the division affected.

As in the Refinery Department we have established a code system for distributing the B. & M. expenses. These code numbers are grouped in such a way as to classify the expense under its proper subdivision.

The Barrelling and Marketing expenses consist of the expenses of operating motor tank wagons, horse-drawn tank wagons, stable equipment, commissions, cost of wooden and steel barrels, outside drayage expense, service stations, salesmen's salaries and expenses, office expenses, rents, taxes, licenses, preparing, filling and cleaning wooden and

steel barrels, fuel and general overhead expenses. Under these are further subdivisions under various captions so that the proper control may be kept of expenditures.

The details of all these expenses are accumulated on the Hollerith Machine. I believe it is not necessary for me to go into detail in connection with the operation of this machine as no doubt you gentlemen are all familiar with it. After all these expenses have been accumulated and balanced on the machine, we make up periodically what we call a Comparative Analysis of our B. & M. Expense. This shows all of the expenses under the main divisions mentioned above as well as the various sub-headings, comparing the period under review with the same period last year. This statement is an excellent report for assisting the operating management to control expenses.

Having obtained the cost of marketing for each division under the headings as referred to above, they are transferred to our Barrelling and Marketing Cost Statement. This statement is arranged so that it shows the cost of marketing various products of the Company according to modes of delivery, which are by motor or horse-drawn wagons, barrels, cases and bulk. In other words, a cost per gallon is obtained of marketing each product by these modes of delivery. We do not try to separate the cost according to grades of oil. All grades of one product are considered together for marketing cost purposes, i.e., all grades of gasoline, refined oil, lubricating oil, petroleum merchandise, fuel and gas oil are recapped under these major headings for cost purposes.

In as far as possible all of the expenses are allocated direct to the product and mode of delivery affected. However, there are a large number of items of expense which cannot be thus allocated, and must of necessity be distributed over the various products. From our sales recap is obtained the quantity of each product sold, and where products are sold by the pound or ton, they are reduced to a common basis, viz., a gallon. The items to be distributed are then pro-rated according to the number of gallons of each product sold.

There are, however, some exceptions to this general rule, as we are obliged to adjust or equalize the gallonage on certain products to prevent some products which, from experience, we know cost little to market, from drawing

an unfair proportion of the expense. The best example of this is bulk deliveries of Fuel Oil. We often make deliveries of this product direct from our storage tank to our customer's ship. You will therefore see that several thousand barrels of fuel oil may be handled in this manner with considerably less expense than preparing, painting, filling, weighing, labelling and shipping a few barrels of the same oil in wooden or steel barrels. Admitting this fact we must of necessity eliminate these bulk gallons from our actual sales gallons before allocating the general items. Sometimes products are shipped from one of our refineries direct to a customer and in such cases the only expense entailed by the Marketing Department is clerical and salesmen's expenses. Such shipments are likewise eliminated from our figuration.

Taking our total sales of each product and deducting the eliminated quantities just mentioned leaves us with net quantities which can now be used as a basis of allocating the general items. It may appear from the foregoing that should our sales of say fuel oil consist mainly of bulk sales, fuel oil would draw very little if any expense. This would be true if it were not for the fact that by experience we have been able to set an arbitrary figure of a certain expense per gallon on the quantity of each product eliminated. The expense set up in this way is accumulated from such general items as rents, taxes, general plant and general office expenses. In other words a set proportion is deducted from each of these expenses and charged back into the fuel oil expense where it is added to the expense with which the fuel oil will already have been charged as its proportion of the regular spread.

After this allocation has been completed and the total cost of marketing each product obtained, it is divided by the sales of the products according to the mode of delivery and thus a cost per gallon is obtained for each product sold by tank wagon, barrel, cases and other bulk.

General

I have endeavoured to cover the cost of the raw material, the transportation to the refinery, cost of manufacturing crude into the finished product and the cost of marketing the finished product. There are numerous details in arriving at these costs which have been eliminated, but

it has been my purpose to outline to you only in a general way the principal features that pertain to cost accounting in the Petroleum Industry.

Before closing I want to bring to the attention of this Society a development that is being carried on in connection with the accounting of the Petroleum Industry in the United States.

In December, 1924, the American Petroleum Institute appointed a committee, made up quite largely of the accounting heads of the leading petroleum companies in the United States, to draw up a uniform method of accounting for the Petroleum Industry. In view of the large number of companies interested in this question, the proposition had to be approached in terms of principles of accounting, eliminating details personal and private to individual interests.

The Committee's task was not an easy one. They were, however, able to lay before the last Annual Meeting of the American Petroleum Institute a uniform general balance sheet, which was approved by the Institute. To my knowledge a great many of the principal petroleum companies in the United States have adopted this standard balance sheet. This balance sheet as it is now issued covers all branches and operations of the petroleum industry. It is designed to be applicable for large companies and small companies, for intergraded companies carrying on operations in all branches of the business and for companies operating in only one branch.

It is difficult to enumerate or even foresee now all of the advantages that will accrue to the oil industry through its having available for its use a uniform method of accounting. This Committee is still functioning and is at the present time working on a uniform set of accounts covering operating expenses and income.

SOCIETY OF CHARTERED ACCOUNTANTS OF THE PROVINCE OF QUEBEC

BY an act passed at the last session of the Quebec legislature, the name of the Association of Accountants in Montreal is changed to "The Society of Chartered Accountants of the Province of Quebec," or, in French, "La Société des Comptables Agréés de la Province de Quebec."

The Need for More Stable Money

By DR. J. P. DAY, B.A., B.Sc. (London), D.Phil. (St. Andrew's)

Associate Professor of Economics, McGill University, Montreal

(Before the Annual Dinner of the Montreal Chapter, April 26, 1927.)

MAY I first say how pleased I am to be here to-night as your guest. I am, as you know, a Professor of Economics, and I feel that your Society and the Economics Department of a University have very much in common. The Economics Course at a University deals essentially with the problem of making the best use of resources, but the solution of this problem in actual business life, and in relation to any one industry or business, demands the services of the cost accountant. Both of us, my Department and your Society, I believe, have the opportunity of doing invaluable service, not only in the useful help we give to the individual, but, through such help to individuals, we can and do guide to some extent, and perhaps to a very considerable extent, the economic developments and activities of this progressive country into those channels where they will be most beneficial to the prosperity of the whole community. And the better we do our work, the more the country benefits. But it seems to me that all your work is handicapped by the fact that you are working with an essentially faulty instrument. Your unit of measurement, your unit of monetary value, is the dollar, and unfortunately the dollar is only a relatively stable unit. When the monetary unit becomes violently unstable, as the German mark did in 1923, accountancy becomes impossible. Nominal values leapt up a hundredfold in a month; as if what one had called cents at the beginning of a month, one was obliged to call dollars at the end. Statements of accounts and balance sheets lost all meaning. To-day, Germany and most of the World have got back to a comparatively stable monetary unit, but yet the unit is not entirely stable, not so stable as it might be, and to the extent that instability exists, it spoils the results which all your care for right principles of accountancy and accurate methods would otherwise give.

Besides introducing an element of falsity into accounting, the instability of the monetary unit has many other grievous results, so many and so important in fact that Sir Josiah Stamp does not hesitate to call it the greatest single evil of our time. In the United Kingdom, for example, it took £179 in 1923 to buy what £100 would have bought before the War. This led to the need to adjust wages and salaries to this higher level, and the process of adjustment was difficult, spasmodic, uneven, discontinuous, and often unfair, causing distress and discontent. The difficulties arising out of the adjustment of wages are familiar to all: just recently we have some facts which may interest you about the adjustment of the earnings of professional men. Taking the 200 highest paid doctors in 1923, they had only been able to raise their professional earnings by 36%, instead of the 79%, which was necessary to put them on the same level as in 1914; the 300 highest paid solicitors had reached a 57% increase, and the 50 highest paid dentists 45%. In fact, the only large profession which has been able to earn enough to better its position was the Accountant's, the 200 highest paid of whom had increased their earnings by 98%. If one takes not the highest paid, but other samples, the results are a little more favourable for the other professions, especially in the lowest paid ranks, but the only profession the increase of whose earnings in the United Kingdom has really out-paced the rise in the cost of living has been the Accountant's.

My point is that the monetary unit ought to be of stable value, a unit whose purchasing power should be about the same year by year. Every civilized country in the World to-day is giving increased attention to the possibilities of a greater stabilization of its monetary unit, which means, of course, a stabilization of the general level of prices. There are many serious evils which could be avoided and many advantages which could be gained, if this stabilization could be achieved. And there are several ways and possibilities which might contribute to success, among which the most important is generally considered to be the proper control of credit through the banks. Too much credit means inflated prices, and too little means an unnecessary handicap to business enterprise. So important is this proper control of credit ,that most countries have established a special organization, usually called a Central Bank,

to exercise control. The Bank of England, co-operating with the Treasury, so acts for Britain; the Federal Reserve Board is supposed to act so for the United States, and all the British Dominions, except Canada, have Central Banks of Rediscount. Now I—open as I am to the charge of not having lived very long in Canada—do not wish to pose as an authority. It may very well be that we have a banking system here which is exceptionally adapted to our needs and requirements, and that we do not need to follow the example of the other countries in establishing any Central Bank; but what I do feel is that here in Canada in this matter of the control of credit, there is a certain lack of responsibility. In countries which have a Central Bank, the people know who are responsible for the general credit policy. In Canada, we do not; we do not know whether, or how far the great chartered Banks accept any direct responsibility to anyone except their shareholders and their customers; or whether one Bank could if others did not; or what degree of co-operation exists; or how far the Ministry of Finance at Ottawa, the Central Gold Trustees, or the Treasury Board accept any responsibility. If a Conference of the directors of the Central Banks of the Empire is held soon, as may well happen, how will Canada select a representative?

The whole subject is, I am afraid, too technical and difficult to be dealt with in an after-dinner speech, but in conclusion I would like to emphasize again:

(1) We need a monetary unit whose purchasing power would be as nearly stable as possible.

(2) The maintenance of a stable value, i.e., of a stable general level of prices, is largely a matter of credit policy.

(3) We should know who accepts the responsibility of so regulating the creation of credit as to maintain, in the interests of the country at large, a stable general level of prices.

(4) If the Banks jointly accept this responsibility and can co-operate under present conditions to achieve this result, well and good; but if this is not so, we should consider the possibilities of improving the existing methods of general credit control.

Annual Convention

SEPTEMBER 7th, 8th and 9th are the dates set for the second annual convention of the Canadian Society of Cost Accountants, to be held in the city of Montreal. The executive has been fortunate in securing accommodation for the first and third days at McGill University, and for the second day at L'Ecole des Hautes Etudes Commerciales. Plans are now being completed, and the arrangements already made assure that the convention will be of the greatest interest and value to the members. There will be several technical addresses of practical value to every member, interspersed with subjects of broader interest. Among the outstanding features on the tentative program are the following:—

Address on Harvesting, Distribution of Crops, the Operation of Wheat Pools, and the various Co-operative Societies, by Dr. Robert Magill, Secretary of the Winnipeg Grain Exchange, and formerly Chairman of the Board of Grain Commissioners for Canada.

Exhibit of a two-reel film entitled, "Food for Millions," illustrating the various stages in the production of wheat, its marketing, transport and export.

Address on Costs in the Packing Industry, by Mr. G. M. Pelton, of Swift and Company, Chicago, accompanied by a film entitled "From the Trail to the Table," illustrating the operations of the packing industry.

Address by an executive of Price Bros. & Company, Ltd., on Costs in the Pulp and Paper Industry, accompanied by films of the industry.

Address on Mining and Smelting, accompanied by a film.

Address by Mr. F. L. Sweetser, Vice-President, National Association of Cost Accountants.

Address by Mr. Beaudry Leman, General Manager, La Banque Canadienne Nationale, Montreal.

Address by Mr. Henry Laureys, Director, L'Ecole des Hautes Etudes Commerciales, University of Montreal.

Exhibits will be at McGill University.

There will be an extensive program of entertainment, including a luncheon on the 7th at McGill University, a

luncheon on the 8th at the Place Viger Hotel, and a final dinner or dinner-dance on the 9th at the Windsor Hotel. Arrangements for golf and other features are also being made.

Further information will be given in our July issue.

CHAPTER NOTES

MONTREAL

Owing to pressure of other duties, Mr. R. R. Johnson has had to resign the secretaryship of Montreal Chapter. He is succeeded by Mr. D. R. Patton, B.Com., C.A., c/o Messrs. R. Schurman and Company, 189 St. James Street.

Montreal members are looking forward with keen interest to the big convention to be held in September. We look for a 100 per cent. attendance of local members, and the gathering should be the means of bringing a good many more into the society.

TORONTO

J. W. Spence, a member of Toronto executive, has extended an invitation for a visit to "Kodak Heights," the plant of the Canadian Kodak Company, Ltd. The date is to be arranged later. This should be a pleasant and instructive outing for local members.

HAMILTON

The annual meeting and dinner of Hamilton Chapter was held on May 19, at the Royal Connaught Hotel. There were about eighty present, including fifteen from Toronto. R. E. Love presided. The speakers were T. N. Dean, of the Ontario Workmen's Compensation Board, and Rev. Dr. Johnston. James Turner, C.A., of Toronto, vice-president of the society, also spoke briefly. Good entertainment was provided. The new list of officers is given on the inside front cover of this journal.

The Canadian Society of Cost Accountants

APPLICATION FOR MEMBERSHIP

Name in full ..... Age .....

Address in full .....

Firm with whom engaged .....

Firm's address in full .....

Firm's Business ..... Position held .....

Names and addresses of two references:

.....

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(If applicant is a Member of any Accounting Institute or Society incorporated under the authority of any Provincial Legislature, it will be sufficient to give the name and address of the Secretary of such Institute or Society.)

To The Canadian Society of Cost Accountants, 81 Victoria Street, Toronto.

I hereby apply to be admitted a Member of The Canadian Society of Cost Accountants and undertake if admitted to observe all the By-laws and Regulations of the Society for the time being in force.

I enclose herewith ..... Dollars, being my Membership fee to the end of the current half year, which is to be returned to me if this application is not accepted.

year

SIGNATURE OF APPLICANT .....

DATE .....